/138 cont./
241 825 particular suffers greatly from this type of ant, but maize, tajer, and bananas are also eaten. This plague is so serious that the clearing of a new ground is partially determined by the occurrence of the nests of these ants at the place. Normally these nests lie fairly far apart in the forest, but as soon as the crops of the grounds come within the domain of the ants, the nests grow rampantly. In addition, at just about planting time the ants produce numerous sexual forms, which, as a result of the cleared lands, have a favorable opportunity to swarm and found new colonies. The leaf-cutting ants are therefore "Kulturfolger" /followers of culture/.

As a result of this plague of ants, it is usually not possible for the Bush Negroes to cut extensions to the existing grounds for longer than two to three years. After all, the kapoeweri of the abandoned pieces of ground functions then as a hiding place for the younger ant-nests, and one drags, as it were, the ant plague along with one. There is no combating the ants, and through impotence the Bush Negro is forced to yield the field. This flight before the ants consists in the search for new grounds farther into the bush or, in case this is no longer possible for some reason, in the occupation of new lands elsewhere along the river.

137 136 /139/ Stahel (1) has pointed to the fact that among the Bush

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1. Het Bosnegervraagstuk en het Coronieplan /The Bush Negro Question and the Coronie Plan/, Department Landbouwproefstation Surinam /Department of Agriculture Research Station, Surinam/, Report No. 9, October, 1944, 28 pp.

Negroes the older grounds change into a low second-growth, called by him "ant-kapoeweri" /ant-bush/. In effect, in many places where a dense Bush Negro population is found, such a strip of second growth occurs along the rivers. According to Stahel, this inferior bush comes
● 13 about through the presence of the great nests of leaf-cutting ants. Ac-
[114] cording to his calculation, at a density of six ant nests per hectare (a maximum which is confirmed in the vicinity of Paramaribo, but which, according to my own observations in the Bush Negro lands,

/139 cont./

13 seems too high to me), the ants can bring into the soil each year two to three tons of leaf material per hectare. As a result the soil would be so enriched with humus and, in addition, through the construction of the numerous nest corridors, receive so much extra ventilation that the oxygen content and the microbiological condition of this soil would tend to differ from the mineral soils in which the virgin forest is rooted. As proof of this, it is stated "that even the oldest ant-kapoeweri directly behind the villages shows no tendency to grow into normal high forest" (p. 13).

114 137 136 It does not seem correct to me to ascribe this kapoeweri phenomenon only to the presence and the activity of the leaf-cutting ants. In my opinion the ants here constitute a troublesome contributing factor, for when the virgin-forest grounds are abandoned by the population and no new food material is available to the ants while the kapoeweri gradually grows into higher forest, then the balance in the ant population re-establishes itself. This process takes place at a slow rate, depending on the local circumstances, but it leads to the re-establishment of the original situation. There is, however, one condition connected with it, namely, that the forest be left in peace for a long enough stretch. 241 134 Now this last is not the case for the grounds area of the Bush Negroes. They return too soon (within ten years) to clear grounds again, with the consequence that the soil becomes too exhausted and the recovery of the forest becomes impossible.

171 241 137 [136] Proof for this viewpoint is already provided by Stahel (loc. cit.) in his consideration of the agriculture of the upland Indians. The absence of the ant-kopoeweri there is not a matter of a lesser ant infestation, as Stahel /140/ believes -- for in places this is equally serious -- but of a less intensive use of the forest lands. [161] [423] [361] The Indians are present in small numbers (a few hundred, as against thousands of Bush Negroes), while only communal plots are laid out for one village, and not different ones for each family. In addition, the Indians move frequently in order to find new hunting and fishing grounds.

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241 There is yet another factor which plays a role in the origin
134 of the grounds-kapoeweri. This is the use of fire in clearing the
137 ground. The burning of the cut forest is done at the expense of the humus on and in the soil. The fertilization with ashes that one obtains by it only partially covers this loss. Furthermore, under the influence of the fire there are great disturbances in the balance of the microflora and fauna of the soil, hindering the conversion of organic materials into inorganic compounds. Sun and rain bring changes in the structure of the scorched earth, which forms a cement-like crust and becomes sealed. Also the growing of cultivated crops, especially cassave, draws many mineral components from the soil.

● 13 It is clear that the soil needs time to recover after this disturbance of the balance. This period of time is estimated at 25-30 years. The leaf-cutting ants play a part in this; they again enrich the soil with humus by bringing great quantities of leaves into their ground nests. In addition, they ventilate the soil by digging numerous nest corridors. In this manner the ants contribute
[242] to the recovery. It is well-known, moreover, that the soil on old leaf-cutting ant nests is fertile; one likes to plant bananas on it. If we assume with Stahel that in this kapoeweri six ant nests per hectare are found, then these nests together would only have a maximum surface of one-tenth of it. This would never be able to hinder the full growth of the forest.

136 That the leaf cutting ants occupy the secondary growth, or at
137 least are present there in greater numbers than is normally the case
241 in the forest, may be a consequence of the laying out of new grounds within their domain. Because of the lack of land, the Bush Negroes are constantly trying to lay out grounds again in this forest. The ants, moreover can maintain themselves because there are various forest trees that supply the ants with sufficient leaf material.

13 Thus, because of both the decreased capacity of the soil and
311 the presence of the leaf-cutting ants, the ant-kapoeweri forms a terrain that has become unusable for present-day primitive Bush Negro agriculture./141/ And from the standpoint of forestry too the ant-kapoeweri is worthless.